



X-Plain™ *Hearing Loss*

Reference Summary

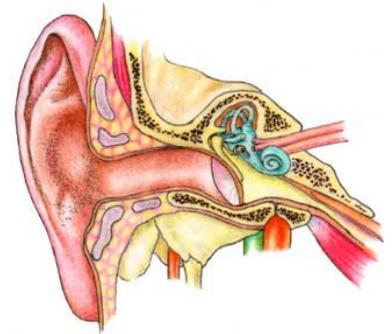
Hearing problems are pretty common in older people. Around one in three people over the age of 65 have hearing loss. Most people can have very good hearing with the help of hearing aids. Hearing aids have gotten smaller and better because of technology. This reference summary will help you better understand hearing loss.

Anatomy And Hearing

Our ears are very specialized organs that allow us to hear and to keep our balance.

Each ear has three sections:

- 1) The outer ear, which includes the auricle and the ear canal. The ear canal leads inside the ear to the eardrum, or tympanic membrane.
- 2) The middle ear formed of three small bones known as the ossicles.
- 3) The inner ear.



Cartilage covered with skin forms the auricle. Unlike bone, ear cartilage may continue to grow throughout life, which is why older people usually have bigger ears than younger people. The auricle acts like a satellite dish to collect sound waves, which are vibrations in the air.

The sound waves enter through the ear canal to the eardrum. The eardrum vibrates and causes the three small bones of the middle ear to vibrate and send the vibration to the inner ear. The vibrations sent to the inner ear are then relayed to a special organ inside the inner ear, known as the “cochlea.” The cochlea has a snail-like shape. Inside the cochlea, the vibration is changed into electrical signals. A nerve called the eighth nerve carries the electrical signals to the brain, where they are understood as sounds.

Another part of the inner ear is responsible for balance. The eighth nerve also carries information to the part of the brain that is responsible for balance. This is why many times hearing problems and balance problems happen together. The fact that we have

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two ears helps us figure out where a sound is coming from. Sound waves reach the ear closest to them before reaching the other ear.

Even though the difference is less than one second, it is enough for the brain to identify where the sound came from.

Causes

Hearing loss can result from a variety of problems. Some problems are congenital, meaning people are born with them. Other problems include tumors, infections, brain injuries, and aging. Some hearing loss is inherited and runs in families.

Tumors that involve the eighth nerve may result in hearing loss. The most common tumors that involve the eighth nerve are called acoustic neuromas. The ossicles in the middle ear can become stiff and stop vibrating correctly. This is known as otosclerosis. When this stiffness occurs, hearing loss can result.

Sometimes wax can clog the ear canal and cause an infection. Infection or obstruction of the ear canal may result in a hearing loss in the affected ear. Repeated infection of the middle ear can also lead to damage of the ossicles. Hearing loss and sometimes deafness may result from repeated infections.

Another reason for deafness is repeated exposure to loud noises, such as loud music, machinery, lawn mowers etc. Some medications can either reversibly or irreversibly damage hearing. You should tell your doctor about all the medications you are taking.

In some cases, the eardrum may tear. A torn eardrum cannot correctly send vibrations to the inner ear the way an intact eardrum would. Hearing loss can result in the affected ear. Some forms of hearing loss or deafness are related to brain injuries. When the part of the brain that understands sounds is injured, hearing loss or deafness can result.

The most common cause of hearing loss or deafness is due to the aging process. It is known as presbycusis. It starts in early adulthood and becomes more noticeable after the age of 50. Men are usually affected more than women.

Symptoms

The most common symptom of hearing loss is when the affected patient cannot hear what is being said. Sounds may be muffled and the patient may not be able to hear the difference between sounds.



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Hearing loss is first noticed in noisy surroundings and when the patient cannot see the lips of the person he or she is trying to listen to.

This is why most patients first notice their hearing loss while speaking on the phone. Earaches may be common if the hearing loss is due to repeated ear infections or to a perforated tympanic membrane.

In the cases of infections, pus and blood may actually be seen coming out of the external auditory canal.

Dizziness may also accompany hearing loss, especially in cases of Ménière's disease. Ménière's disease is a disease of the inner ear causing a variety of symptoms such as severe dizziness, a roaring sound in the ears, fluctuating hearing loss, and the sensation of pressure or pain in the ear.

The sound of continuous buzzing in the ear may be heard in patients with hearing loss especially patients who have acoustic neuromas, a form of tumor. This buzzing is known as tinnitus.

Diagnosis

The diagnosis of hearing loss and its cause starts with a detailed medical history and physical examination. The examination may include a detailed inspection of the ear using special instruments such as an otoscope or even a specialized microscope.

Auditory tests are usually given to determine the extent of the hearing loss. CAT scans and MRIs of the ears and brain may be done to rule out the possibility of fractures or tumors.

Treatment

The treatment of hearing loss depends on its cause. Infections may be treated with antibiotics. Perforated tympanic membranes and the stiffness of the ossicles may be repaired through surgery.

Clogged ear canals may be opened up and cleaned. This



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is done using a small special probe and an otoscope or a microscope. Hearing aids may also be needed to make sounds louder and cut down on background noises. Some hearing aids fit inside the external auditory canal and cannot even be seen.

Impaired Hearing Tips

Most patients who have lost their hearing after they have learned to speak are able to read lips and are still able to speak. Patients may want to inform the people they talk to about their hearing problems. They may ask people to talk slower and clearer.

These two techniques help patients read lips and understand better. It can also be helpful for hearing loss patients to stay away from noisy places and look at the lips of the person speaking to them.

Using closed captioning helps patients with hearing problems enjoy television programs and movies. Services are also available for people with severe hearing loss to talk on the phone. Headsets that make sounds louder or services that turn spoken words into readable words are available in some places.



For patients with severe hearing loss, learning sign language can be very helpful and worthwhile. Patients undergoing elective surgery where deafness may result are encouraged to learn sign language while they are still able to hear.

Summary

Hearing loss is fairly common, especially after the age of 50.

Hearing aids and special hearing techniques can help make hearing loss more bearable.

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